

Kodak Professional

Large Format 4800 Series Inkjet Printers



Reference Guide

WARRANTY

United States

Kodak warrants its printers (“PRODUCT”) to be free from defects in workmanship and materials for a period of one year from the date of purchase.

Kodak reserves the right to make changes or improvements to Products, without incurring any obligation to similarly alter Products previously purchased.

Buyer’s sole and exclusive rights pursuant to this Warranty shall be for the repair or replacement of defective Product. Kodak specifically disclaims any and all other warranties, expressed or implied, including but not limited to, implied warranties of merchantability and fitness for a particular purpose. In no event shall Kodak be liable for any loss of profit or other commercial damages, special, incidental or consequential damages, or any other damages or claims, whatsoever.

This Warranty gives Buyer specific legal rights, and Buyer may also have other rights that vary from state to state.

This Warranty applies only to printers purchased from Kodak, or authorized Kodak distributors or dealers. The intent of this Warranty is to repair or replace defective Products subjected to normal wear and tear, when operated according to Kodak instructions.

This warranty does not cover damage to the Product resulting from the following:

- **Accident or negligence.**
- **Unauthorized modification of the Product.**
- **Adverse environmental conditions.**
- **Service of the Product by other than a Kodak authorized service provider.**
- **Unauthorized or improper use, including but not limited to:**
 - **Use in applications for which the Product was not designed.**
 - **Using cartridges, ink, or media other than Kodak products.**
 - **Lubricating any part of the printer.**

Internationally: Contact your dealer or distributor for warranty information.

FCC Statement (U.S.A.)

The United States Federal Communications Commission has specified that the following notice be brought to the attention of users of the KODAK printers.

FEDERAL COMMUNICATIONS COMMISSION RADIO AND TELEVISION
INTERFERENCE FOR CLASS A DEVICE

Statement

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

VDE statement

Hiermit wird bescheinigt, daß der Drucker in Übereinstimmung mit den Bestimmungen der BMPT-AmstbIVfg 234/1991 funkentstört ist. Der vorschriftsmäßige Betrieb mancher Geräte (z.B. Meßsender) kann allerdings gewissen Einschränkungen unterliegen. Beachten Sie deshalb die Hinweise in der Bedienungsanleitung.

Dem Zentralamt für Zulassungen im Fernmeldewesen würde den Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf die Einhaltung der Bestimmungen eingeräumt.

Industry Canada

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

VCCI Japan

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波障害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

Material safety data sheet

To obtain information on the proper use, handling, and disposal of Kodak inks, consult the material safety data sheet (MSDS) which should have shipped with your first ink order. MSDSs can also be obtained from the Kodak Environmental Services web page (<http://www.kodak.com/go/kes>) by using the product name or catalog number. MSDSs can also be obtained by calling the Kodak Information Center (KIC) at 1-800-23KODAK.

The disposal of any product is typically municipality dependent. There should be enough information on the MSDS to provide enough guidance for proper disposal. If you are unsure, contact your local municipality or the Kodak Environmental Services group at (716) 477-3194.

Printer Disposal

This product contains a small amount of lead. Disposal of this product may be regulated due to environmental considerations. For disposal or recycling, please contact your local authorities.

General operating safety

The use of a <HAR> cord set (rated 10A, 250VAC) with the proper plug configuration for the country where the device will be used, is required for continued safety compliance.

Ein harmonisiertes (<HAR>) Netzkabel (min. 10A, 250V~) mit dem vorgeschriebenen Netzstecker für das entsprechende Land in dem das Gerät installiert wird, ist unbedingt notwendig für die elektrische Sicherheit.

El uso de cable poder <marcado HAR> (capacidad de 10A, 250V~), con el enchufe apropiado para el país donde se use el producto, es requerido para acatamiento de seguridad eléctrica.

L'emploi d'un cordon surmoulé <HAR> (estimé 10A, 250V CA) avec la configuration de la fiche convenable pour le pays où l'appareil sera utilisé, est exigé pour la conformité à la sécurité continuée.

Dryer safety



CAUTION: Never open the dryer. There are no user serviceable parts inside. Refer servicing to qualified service personnel only.



CAUTION: This assembly heat by radiation.



CAUTION: Once the dryer is plugged in, there is continuous power to the dryer, **even when the printer is turned off.**

DISCONNECT POWER CORD BEFORE SERVICING!

Manual conventions



Indicates a procedure for you to follow in order to perform a specific function. Read the accompanying explanatory text before following the step-by-step procedure.



Indicates a warning. Ignoring the warning can damage the printer or result in an unsatisfactorily printed image.



Indicates a tip or suggestion that can make using the printer easier or improve your printed images.

Other reference materials

In addition to this guide, the following additional documentation is included with your printer:

Quick Start Guide - Tells you how to assemble and install the printer's hardware.

System CD-ROM - the system CD-ROM contains:

- Maintenance Guide, instructions for maintaining your 4800 printer; and
- print server software.

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This Reference Guide describes the KODAK PROFESSIONAL Large Format 4800 Series Printer inkjet printer.

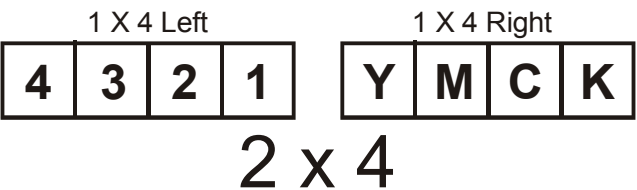


These printers give you professional-quality output with all the brilliance and gloss of liquid ink. For signmakers, service bureaus, photographic services, creative and business professionals, our printers let you experience the value of exceptional graphics quality. These printers cut hours of production time, while giving you the dramatic impact of high fidelity images. These printers are being used for many types of printing needs:

- Posters
- Signs
- Imposition proofing
- Banners
- Packaging prototypes
- Point of purchase
- Exhibits
- POP Displays
- Fine art

Printing with 4800 Series printers

This printer is an 8-head inkjet printer. You can print with the left four cartridges, the right four cartridges or all eight cartridges. Facing the printer, the left four cartridges are designated as 1 x 4 Left cartridge set, the right four cartridges are designated as 1 x 4 Right cartridge set and when using all cartridges they are designated as 2 x 4 cartridge set. The following illustration will help you identify each one of the stalls or slots on the carriage where the cartridges are installed.



Featuring a continuous-feeding ink system which uses 500ml reservoirs for each color, you never have to worry about running out of ink halfway through a big print job. Before starting a print job, just look at the transparent plastic reservoirs to check the ink supply. When the ink supply is low, just open the cap and refill. In addition, the printer features dual ink lines on the 1 x 4 Left cartridge set, which makes fast work of switching from one type of ink to another.

These printers accept raster-oriented data in the form of HP RTL format. In this mode, printing begins immediately after the first complete line of HP RTL data is received. Depending on the software used, millions of colors are possible, yielding superb results for continuous-tone images or 3D renderings.

If your applications do not support HP RTL, there are several software utilities available to convert various raster file formats (TIFF, GIF, BMP, etc.) into HP RTL. There are also more than 50 Raster Image Processors (RIPs) which convert Postscript or CGM to HP RTL. When choosing a RIP or a file format converter for output to the printer, make sure it has the features you need. (Contact your reseller for an up-to-date listing.)

Obtaining quality results

You have probably seen a demonstration of your printer's capabilities or sample output. If so, you are aware of the superb color graphics which can be obtained, and the variety of papers and films you can use. Note, however, that to obtain high-quality results, you must consider several factors. Follow the simple guidelines in the sections that follow to obtain excellent results.

Use the Correct Inks and Media

KODAK has inks and media for your job regardless of what output you want to print with your large format 4800 printers. KODAK's image scientists, color scientists, ink formulators, and media formulators work together to produce a line of supplies that are scientifically matched with this printer. Refer to KODAK's Ink and Media Data Sheets for details on KODAK's line of inks and media that are compatible with these printers.

Caring for Media

Storage

Store inkjet media in the original box at 65 to 75° F (18 to 24° C) at 45 to 55% relative humidity. Extreme temperatures and variations in humidity could adversely affect product performance.

Operating Environment

These media work best in an environment ranging from 68 to 82° F (20 to 28° C) at 30 to 70% relative humidity. Image drying time depends on the humidity, temperature, and amount of ink coverage. Inks dry more slowly when relative humidity is high. When relative humidity is too low, inks may not spread enough to obscure scan lines resulting in banding which is usually first observed in areas of solid colors.

Handling

KODAK PROFESSIONAL inkjet media are wound ink-receiving side out. The ink-receiving side has a slightly rougher surface compared to the surface on the back side. Avoid getting fingerprints on the image area of the ink-receiving side. Wear clean cotton or latex gloves, and handle rolls only by the edges. Also, keep the material free from moisture at all times.

Caring for your ink and cartridges

- ! Handle cartridges only on the plastic areas. Touching the copper electrical interconnect or the inkjets can damage the cartridge.
- Be sure the ink in the cartridges matches the ink in the reservoirs.
- Do not mix inks.
- Do not shake ink refill containers.
- Store ink and cartridges in the same environment as the printer whenever possible.
- Removing cartridges may result in loss of negative pressure and cause the cartridge to leak through the jet plate. If you remove a cartridge from the printer, leave the tube needle attached to the cartridge. This will help maintain negative pressure within the cartridge. Do not leave cartridges exposed to the air for an extended periods because the jets may clog. Replace the original tape on the jet plate. Place the cartridge in a cartridge garage or sealed plastic bag and store it in a closed area at room temperature. Keep it out of direct sunlight.
- Open new cartridges only when you are ready to install them.
- Use only KODAK PROFESSIONAL-brand ink refills and cartridges.
- Be sure to connect cartridges to reservoirs which contain the same color and type of ink originally in the cartridge.
- Drawings containing both black and color elements require alignment of the cartridges to each other. See the Quick Start Guide for details.

Choose the right media

You can rely on KODAK PROFESSIONAL media for rich, vivid images across the entire color spectrum. They are specially formulated to demanding specifications, strict performance criteria, and uncompromising quality controls. This assures superb interaction with KODAK PROFESSIONAL Ink and flawless performance with the printer.

KODAK offers a wide range of sheet and roll media and is always adding new products. Check with your authorized KODAK PROFESSIONAL supplies dealer for the latest offerings.

Caring for your media

Store media in its original packaging in a cool, dry area until you are ready to use it. The environment should be stable; i.e., no extremes of heat and cold, and non-condensing humidity. If conditions are outside the operating ranges recommended for the printer, allow the media to acclimate in the operating environment for at least 48 hours before using it.

If you remove a roll of media from the printer, be sure to store it in a manner which keeps it clean and dust-free. Ideally, you should return it to its original packaging for storage.

Print on the correct side! Roll media is wound with the coated side out.

Handle with care! Handle your media carefully to avoid creases, scrapes, and tears. Avoid crushing or damaging roll media edges.

Wear cotton gloves! Film-based and photographic paper-based media are susceptible to absorbing skin oils. Fingerprints on the media prior to printing may result in visible fingerprints after ink is applied.

Choose the correct printing mode

There are four printing modes, giving you freedom to trade off drawing output quality and speed. When printing heavier renderings, maps or art graphics, choose one of the enhanced printing modes (Photo or Enhanced).

Use the right software

The quality of the software driver or the RIP (Raster Image Processor) can be very important, especially when printing continuous tone images or 3D renderings. Error diffusion or stochastic screening algorithms can yield photo-like images, even when these images are scaled to full size. Software without advanced imaging features may produce images which are grainy when enlarged.

Nine Factors that Affect Print Quality

Understanding all the factors that contribute to print quality is the only way to ensure perfect printing each and every time. This section details nine important factors; by controlling them, you can achieve the very best print quality possible.

1. Use the highest quality type of image possible.
2. Check to make sure the image is in focus and exposed properly.
3. Scan it with the best scanner possible.
4. Scan it at the proper resolution.
5. Color correct and sharpen the image with software.
6. Ensure your color profile accurately reflects the exact ink and media you are using.
7. Use the best diffusion pattern available in your RIP.
8. Use only the best possible ink and media combinations.
9. Make sure your cartridges are aligned and firing properly.

1. Original Image Type

The type of original image will determine the quality of your final inkjet print. The best image type is an original transparency (not a duplicate). They are extremely crisp with superb edge definition. Print film photos are not as good as they are already one generation removed from the original film. Also, because of the emulsion process of photo prints, edge definitions tend to be lost. Color prints can be used, but they have to be of very good quality to produce acceptable scaled prints. Digital photo files are the newest image type. Many are unacceptable for large-format printing as they contain only a small fraction of the information contained in a film transparency.

For example, many digital cameras can only create a 1 MB file. This is not enough information for large inkjet prints. A file must be at least 10 - 12 MB for a fair print and 30 - 50 MB for a good E-size print (see scanning section). Only the best commercial digital cameras can achieve these file sizes. Digital files from other sources such as CD stock photography are usually created from scanned transparencies, so they may be suitable for inkjet printing. Check with the manufacturer to ensure that the images are at least 10 - 12 MB and were created from high-quality drum-scanned transparencies.

The better CDs have images of 28MB or more stored in a TIFF format. These are preferable for great quality prints. If you use a file stored in PhotoCD format, make sure you use the highest resolution available. Images stored in compressed files such as JPEG, LZW, GIF, etc. can lose valuable data during the compression process. Avoid images stored this way if possible. If you have to use a compression file format for whatever reason, use JPEG. It is closer to a “lossless” compression.

2. Original Image Clarity and Color

The quality of the original photograph, transparency, or digital file plays a key role in final print quality as this is where the clarity and color of the image is created. If the original photographer took a picture that was not in focus, or was fuzzy for any reason, sharpening or after-effects cannot correct it and a poor inkjet print will result. Differences in film, speed, grain, or developing process can also affect quality of prints. If the image was too dark or too light, color correction cannot correct it and a poor inkjet print will result. The axiom of “garbage in, garbage out” applies to all printing, including inkjet printing. Companies that utilize a lot of photography for large-format inkjet printing should check for focus by using a loupe. If you have a good, in-focus original, you can maintain the image quality throughout the entire process.

3. Scanner Type

How you get the original image into the computer is important to the overall printing process as scanner quality varies greatly. Using a scanner that meets the requirement of the overall print quality is essential to have enough color fidelity and edge clarity. An image scanned with a low end scanner will lose detail, clarity, and color. It is important that you understand what type of image quality is required for your print and use the right scanner to achieve it.

Traditionally, drum scanners are ideal for retaining the best edge definition and color depth. If the original image is poor, an expensive drum scan may be a waste of money. Almost all service bureaus use drum scanners.

Flatbed scanners require an optional transparency adapter to scan transparencies.

4. Scan Resolution

Scanning the original at low resolution will degrade the large-format inkjet print quality. Scanning at a resolution which is too high slows down the RIP and adds no quality to the image. Consequently, choosing the right resolution for the output print size (and thus, the amount of scaling needed after scanning) will determine what the optimum resolution should be for each image.

The quality of the image you would like to produce is determined by the final output size and the file size. For example, if you want output a 36" x 36" image, the file size will be approximately 24MB for a fair-to-good quality image (75dpi), 43MB for a good-very good quality (100 dpi) and 97MB for an excellent quality (150 dpi) print.

Your service bureau can help you determine the optimum resolution to scan your image based on the size and quality of the image you would like to print.

DO NOT USE INTERPOLATED RESOLUTION OF YOUR SCANNER TO COMPUTE IMAGE SIZE

Most 300 dpi scanners can interpolate or “imitate” 600 dpi scanning. This is really not really scanning at 600 dpi and will degrade the image quality. When scanning, ensure that you are using the scanner's true optical resolution, not its interpolated resolution. Scanning at the highest optical resolution (300 dpi) is better than scanning at the scanner's highest interpolated resolution (600 dpi).

5. Post Scanning Color Correction and Sharpening

All scanned images, even those scanned on expensive drum scanners, must be color corrected and sharpened before using them for a large-format inkjet print. If you are using a service bureau for scanning images, their scanner operator will usually do this as part of the scanning fee. However, you should always check the image before using it. Although the process of color correction and sharpening is more detailed than can be explained within this document, the following outline will give you a good grasp of what is required:

Color Correction - all scanners give the image a slight color cast during the scanning process. This happens because all light sensing devices have a slight bias. The easiest way to correct most of this color cast is to use a function such as Auto Levels in PhotoShop. This function finds the whitest pixel and the darkest pixel in an image and distributes all colors in-between. This works well on 75% of all images that are properly exposed. In very dark night scenes or in very white snow background scenes, Auto Levels does not work properly and the correction must be made manually using histogram adjustments.

Sharpening using UnSharp Mask - all scanned images, even images scanned on the most expensive drum scanners, need to be sharpened. The best digital tool to do this with is a function called an unsharp mask (available in programs such as PhotoShop). An unsharp mask basically redefines the edges of images by adding a mask. Most unsharp mask tools allow you to set the pixel width of the mask and the amount of sharpening. A good start is to use a pixel width of 3 - 5, with an amount of 75%. Too much unsharp mask will give the whole image a hard, pixelated look. A little more unsharp mask can be used with inkjet images as they are somewhat diffused in the printing process, hiding any small amounts of oversharpening.

6. RIP Color Profile

The engine that converts your image into a series of C, M, Y, K dots is called the Raster Image Processor or RIP. Before it can actually create these dot patterns, it must first adjust for the colors of the inks, color of the media, dot volume of the cartridges on a particular machine, and the humidity/temperature of the environment on the day of printing (as this affects how far the ink will spread or dot gain). Most RIPs include what is commonly referred to as a color profile or color link. Usually, this profile is automatically used when you choose the media and ink within the software. However, color profiles are created in the factory with new cartridges in a clean and average environment. If you have older cartridges, media that was stored in sunlight for 6 months, and the humidity is 88%, the standard color profile may not give the best result. In this case, a new color profile may need to be created. Most professional RIPs today have this as an optional process. If your RIP cannot make a change, you can use an image editing program such as PhotoShop and re-RIP the image. Make sure your color profile delivers the colors and quality you need.

7. RIP Diffusion/Dither Patterns

Images that are going to be printed on an inkjet printer are eventually divided into C, M, Y, K and rasterized into dots using patterns that cause the eye to see a continuous tone image. These patterns are called many things, such as frequency modulated screening, diffusion patterns, dither patterns, screen patterns, etc. There are various types of screening that are better for photographic images. Stochastic screening was developed specifically for the CMYK process to avoid the problem of visually perceptible banding that occurs with other pattern types. It does this by pseudo-random placement of dots. Variations of the stochastic strategy have evolved into even better patterns. Each RIP manufacturer uses different names to describe its particular variation on the stochastic theme. To get the best print quality, make sure you are using the best possible diffusion pattern available from the RIP software you are using. Also remember that a different diffusion pattern should be used for spot color objects (such as filled vector objects). If you are printing an image that contains both photographs and spot color objects, use the diffusion pattern designed for photos.

8. Ink and Media

Using the right ink and media is a much bigger factor in print quality than most inkjet users realize. Then and only then can they fully appreciate what quality materials and inks can do. Inks must be developed specifically for a particular head, otherwise, cartridge reliability will be severely reduced. KODAK inks are specifically developed for KODAK cartridges, printers, and media. These inks create the perfect ink drop shape, trajectory, and landing shape when used with KODAK cartridges. The media controls the color, dot gain, and durability of the final print. As the ink must chemically interact with the media, only media developed specifically for a particular ink can achieve the perfect dot shape that leads to improved image quality. Additionally, the chemical bond created through co-developed inks and media is much better than independently developed inks and media. Although many people will not be able to visually perceive differences in quality inks and media initially (poor inks and media show more pronounced visual defects), a less-than-optimal image quality, image color, or image durability will likely develop over time. Chemical compatibility between inks (made for a specific head technology) and media is a key, and often overlooked ingredient to print quality.

9. Cartridge Preparation and Alignment

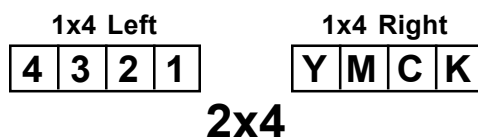
The single most overlooked factor in image color accuracy and quality is cartridge alignment. Even if you carefully control factors 1 through 8, a printer with poor cartridge alignment or unmaintained heads can severely deteriorate image quality. Cartridge maintenance and alignment are key to producing images that exhibit the best of what a printer is capable of. Printer wiping stations must be kept clean so that heads stay clean. Cartridges need to be aligned and checked to be sure that all nozzles are working properly. Use a loupe to evaluate the registration of test patterns to achieve the best possible accuracy. Whenever you adjust, move, or replace a cartridge, take the time to realign the cartridges. Alignment errors of a single pixel (or single digit in the alignment process) affect perceived color and image quality.

You can define printer options through your application software or by choosing settings from the printer's control panel. The following printer options are described in this chapter:

- Cartridge set
- Print mode
- Paper Options
- User Setup
- Initialize (return to printer default settings)

Cartridge set

Your printer is an eight-head inkjet printer. The eight cartridges are grouped into two sets of four cartridges. You can print with the left set of cartridges (1x4 Left), the right set of cartridges (1x4 Right) or all eight cartridges (2x4). You should be familiar with the four cartridge designations of YMCK. To identify the other four cartridges, we have added 4321. Facing the front of the printer, the cartridge sets and cartridges are identified in the following illustration.



Note: You must always determine the cartridge set prior to setting the other Print Mode options, even when selecting one of the pre-defined quality modes.



To choose the cartridge set

- 1 Press **Setup Menu/Print Mode Menu/Cartridge Set**.
- 2 Choose **1x4 Right**, **1x4 Left** or **2x4**.
- 3 Press **OK**.

Choosing print mode options

Your printer offers four quality modes, three of them pre-defined, which let you make tradeoffs between speed and quality.

The quality mode you use depends on various factors, such as your software application, whether you're printing in color or monochrome, and the type of media you're using. Each quality mode directly affects the printing speed and quality of the image you print, so you should understand the differences.

Each of the quality modes attempts to strike a balance between speed and quality. The default quality mode, Photo, provides quality images at a reasonable printing speed for most users. Whenever you choose a print mode other than Photo, you will choose to emphasize either speed or quality.

The quality modes include the following print mode options:

- Color mode
- DPI
- Print passes
- Carriage speed
- Print direction

Selecting the User quality mode will allow you to set each of the print mode options individually. Quality modes are summarized in the table which follows. It is not necessary to set all the parameters, unless you want to create a user-defined print mode. **Note: Make sure you choose the cartridge set before selecting a quality mode.**

Quality Modes for 1x4 Right and 1x4 Left Cartridge Sets

Quality Mode	Color Mode	Dots per Inch	Print Passes	Carriage Speed	Print Direction
Production	Color	600	2	10	Bi
Photo	Color	600	4	10	Bi
Enhanced	Color	600	6	10	Bi
User	User Defined				

Quality Modes for 2x4 Cartridge Set

Quality Mode	Color Mode	Dots per Inch	Print Passes	Carriage Speed	Print Direction
Production	Color	600	2	10	Bi
Photo	Color	600	3	10	Bi
Enhanced	Color	600	4	10	Bi
User	User Defined				

Color mode

Color mode refers to whether you are printing in color or monochrome.



To choose the color mode

- 1 Press **Setup Menu/Print Mode Menu/Color Mode**.
- 2 Choose **Color**, **Mono** or **Gray**.
- 3 Press **OK**.

Quality modes

There are four print quality modes:

Production - This setting is useful for fast, better than average quality printing on paper media.

Photo - For high quality continuous tone images where quality is more important than printing speed. (Default)

Enhanced - This is our best pre-defined quality mode.

User defined - Allows you to set each one of the print mode options individually to meet your unique requirements.



To choose print quality

- 1 Press **Setup Menu/Print Mode Menu/Quality Mode**.
- 2 Choose the desired quality.
- 3 Press **OK**.

Dots per inch

For best results, be sure the printer dpi setting matches the image resolution in the file you are printing.

The printer always prints at 600 dpi, even when the dpi setting in the Print Mode menu is set to 300 dpi. The dpi setting refers to the resolution at which your image is created, not the resolution at which it is printed.

The resolution at which you save your image file affects the size of the printed image as shown in the following table:

Image (file) resolution	Printer dpi setting	Affect on printed output	
300 dpi	300 dpi	1 input pixel prints as 4 output pixels.	The printed image is the same size as the original.
300 dpi	600 dpi	1 input pixel prints as 1 output pixel.	The printed image is 1/2 the length and width of the original.
600 dpi	300 dpi	1 input pixel prints as 4 output pixel.	The printed image is twice the width and length of the original.
600 dpi	600 dpi	1 input pixel prints as 1 output pixel.	The printed image is the same size as the original.



To choose dpi

- 1 Press **Setup menu/Print mode menu/Dots per inch**.
- 2 Choose **300** or **600** as the resolution.
- 3 Press **OK**.

Print passes

The number of passes indicates how many times the cartridges must fire to lay down the ink for a complete scan line. You may select multiple passes, so that on a single pass, the jets fire only a fraction of the dots. If you're printing an image with heavy fill or shading, setting the print mode to an option that lays down less ink can help prevent running and bleeding. **Note:** When using the 2 x 4 cartridge set, a single pass fires ink from two cartridges for each color.

- ✓ Single pass is not recommended for graphic arts printing.



To change the number of passes

- 1 Choose **Setup Menu/Print Mode Menu/Print Passes**.
- 2 Choose **Single, Two, Three, Four, Six, Eight** or **Ten** for 1x4 cartridge sets or **Single, Two, Three, Four** or **Five** for 2x4 cartridge set.
- 3 Press **OK**.

Carriage speed

Carriage speed lets you determine the number of dots per second that are laid down as the carriage moves over the media.



To set the carriage speed

- 1 Press **Setup Menu/Print Mode Menu/Carriage Speed**.
- 2 Choose **1, 2, 3, 4, 5, 6, 7, 8, 9** or **10**. (10 is the fastest.)
- 3 Press **OK**.

Print direction

Print direction specifies whether the inkjets fire on both passes of the carriage over the print area (bidirectional), or just on the return pass (unidirectional). If you're printing an image with heavy fill or shading, unidirectional can reduce running and ink bleeding. If you're more concerned with printer speed, bidirectional firing can decrease your printing time.



To change the print direction

- 1 Press **Setup Menu/Print Mode Menu/Print Direction**.
- 2 Choose **Unidirectional** or **Bidirectional**.
- 3 Press **OK**.

Choosing feed media options

Feed media options allow you to:

- define End of Media
- display/enter Media Counter values

Note: Media feeding and loading are described in the Quick Start Guide.

End of media

There are circumstances where the media does not fully detach from the feeder roll or the media gets stuck and does not fully advance through the printer. In either case, the carriage board sensor detects the presence of media and the printer continues to print. This creates a mess as the printer continues to lay down ink on the same portion of media.

If the End of Media feature is set to FEEDER STOP, the printer will look for an abnormally long absence of the loop of media that occurs between the feeder roll and the platen. After 20 seconds, the printer enters pause mode just as if you had pressed PAUSE from the main menu. The printer will remain in pause mode until you press PAUSE (which toggles to the resume state) or you press RESET. Pressing PAUSE allows you to continue the current print at your discretion.

A few rules regarding the End of Media feature:

- will not work with Cut Sheet selected as supply type.
- setting is remembered across power cycles.
- setting is not stored as a user parameter.
- setting cannot be changed once a plot begins to print.
- if you press PAUSE to resume the print, detection is disabled for the remainder of the print.
- if enabled, detection is reinstated at the beginning of each print.
- when the printer is in pause mode due to End of Media, the printer will beep 3 times every 20 seconds until the PAUSE or RESET buttons are pressed.



To set end of media

- 1 Press **Feed Media Menu/End of Media**.
- 2 Choose **Feeder Stop** or **Normal**.
- 3 Press **OK**.

Media counter

Media Counter gives you a means of **estimating** the amount of media left on a roll. When a new roll of media, or a used roll where the remaining length is known, is installed on the printer, you can enter the length of the roll into the printer's front panel display. As the printer prints, this amount is decremented. You can view the estimated amount of media remaining on the printer's front panel display. When you are ready to remove the roll, you can print the estimated amount of media remaining on the roll. When you reload this media, you can use this figure to enter into the printer's front panel display. The media counter can be reset to 0 to avoid confusion if the media counter is not being used. The media counter will not decrement below 0. The current value of the media counter is maintained across power cycles. The current value is not stored as a user parameter.



To enter a media length value

- 1 Press **Feed Media Menu/Media Counter**.
- 2 Set the media length.
- 3 Press **OK**.



To display the current value

- 1 Press **Feed Media Menu/Display Counter**.
- 2 View the current value.
- 3 Press **EXIT**.



To print the current value

- 1 Press **Feed Media Menu/Display Counter**.
- 2 Press **Print Counter**.
- 3 Press **EXIT**.



To reset the media counter 0

- 1 Press **Feed Media Menu/Media Counter**.
- 2 Press **Reset Counter**.
- 3 Press **OK**.

Choosing paper options

Paper options let you define the following:

- Supply Type
- Margins
- Auto-Cut
- Auto-Cut Delay
- Media Standard
- Auto-Load Delay
- Save Media

Note: Media feeding and loading are described in the Quick Start Guide.

Supply Type

This setting allows you to select your supply options. The available options are sheet, roll, roll2 or takeup. Select sheet if you intend to use cut sheet stock. Select roll if you are going to use roll paper on the upper roll feeder. (No takeup available with this option.) Select roll2 if you are going to use roll paper with the lower roll feeder. (No takeup available with this option.) Select takeup if you intend to use roll paper with the optional takeup system.



To choose supply type

- 1 Press **Setup Menu/Paper Option Menu/Supply Type**.
- 2 Choose the supply type.
- 3 Press **OK**.

Media standard

When you create an image, you determine its size at the computer. It's important that you know the size of the image and load the appropriate size media because the printer automatically defines the print area based on the loaded media's width. Be sure that the media you load is wide enough to accommodate the image. If extra length is required, use roll media. If the media is smaller than the image, the image may be truncated. Minimum media width is 11".



To choose the media standard

- 1 Press **Setup Menu/Paper Option Menu/Media Standard**.
- 2 Choose the size of media you are loading.
- 3 Press **OK**.

The tables which follow provide details on the media sizes and maximum printing areas for rollfeed and sheet media.

Media Sizes and Maximum Printing Areas for Rollfeed Media									
Paper Size			Normal Print Area			Expanded Print Area			
GRAPHICS (U.S. OFFSET)									
	19.0"	x	25.0"	17.8"	x	23.8"	18.6"	x	24.6"
	20.0"	x	28.0"	18.8"	x	26.8"	19.6"	x	27.6"
	22.0"	x	26.0"	20.8"	x	24.8"	21.6"	x	25.6"
	23.0"	x	35.0"	21.8"	x	33.8"	22.6"	x	34.6"
	24.0"	x	29.0"	22.8"	x	27.8"	23.6"	x	28.6"
	25.0"	x	38.0"	23.8"	x	36.8"	24.6"	x	37.6"
	26.0"	x	38.0"	24.8"	x	35.8"	25.6"	x	37.6"
	27.0"	x	39.0"	25.8"	x	37.8"	26.6"	x	38.6"
	30.0"	x	42.0"	28.8"	x	40.8"	29.6"	x	41.6"
	32.0"	x	44.0"	30.8"	x	42.8"	31.6"	x	43.6"
	35.0"	x	45.0"	33.8"	x	43.8"	34.6"	x	44.6"
	36.0"	x	45.0"	34.8"	x	43.8"	35.6"	x	44.6"
	40.0"	x	50.0"	38.8"	x	48.8"	39.6"	x	49.6"
	42.0"	x	65.0"	40.8"	x	63.8"	41.6"	x	64.6"
	48.0"	x	65.0"	46.8"	x	63.8"	47.6"	x	64.6"
	50.0"	x	65.0"	48.8"	x	63.8"	49.6"	x	64.6"
	54.0"	x	65.0"	52.8"	x	63.8"	53.6"	x	64.6"
	60.0"	x	65.0"	58.8"	x	63.8"	59.6"	x	64.6"
U.S. ARCHITECTURAL									
A	9.0"	x	12.0"	7.8"	x	10.8"	8.6"	x	11.6"
B	12.0"	x	18.0"	10.8"	x	16.8"	11.6"	x	17.6"
C	18.0"	x	24.0"	16.8"	x	22.8"	17.6"	x	23.6"
D	24.0"	x	36.0"	22.8"	x	34.8"	23.6"	x	35.6"
E	36.0"	x	48.0"	34.8"	x	46.8"	35.6"	x	47.6"
U.S. ENGINEERING									
B	11.0"	x	17.0"	9.8"	x	15.8"	11.6"	x	16.6"
C	17.0"	x	22.0"	15.8"	x	20.8"	16.6"	x	21.6"
D	22.0"	x	34.0"	20.8"	x	32.8"	21.6"	x	33.6"
E	34.0"	x	44.0"	32.8"	x	42.8"	33.6"	x	43.6"
ISO-A									
A3	297	x	420 mm	267	x	390 mm	287	x	410 mm
A2	420	x	594 mm	390	x	564 mm	410	x	584 mm
A1	594	x	840 mm	564	x	811 mm	584	x	831 mm
	625	x	880 mm	595	x	850 mm	615	x	870 mm
A0	841	x	1189 mm	811	x	1159 mm	831	x	1179 mm
METRIC-DIN									
A3	337	x	460 mm	307	x	430 mm	327	x	450 mm
A2	460	x	634 mm	430	x	604 mm	450	x	624 mm
	610	x	860 mm	580	x	830 mm	600	x	850 mm
A1	634	x	881 mm	604	x	851 mm	624	x	871 mm
	860	x	1220 mm	830	x	1190 mm	850	x	1200 mm
A0	881	x	1129 mm	851	x	1199 mm	871	x	1219 mm
	1000	x	1414 mm	970	x	1384 mm	990	x	1404 mm
	1189	x	1682 mm	1159	x	1652 mm	1179	x	1672 mm
ISO-B									
B4	250	x	353 mm	220	x	323 mm	240	x	343 mm
B3	353	x	500 mm	323	x	470 mm	343	x	490 mm
B2	500	x	707 mm	470	x	677 mm	490	x	697 mm
B1	707	x	1000 mm	677	x	970 mm	697	x	990 mm

Media Sizes and Maximum Printing Areas for Sheet Media

Paper Size			Normal Print Area		Expanded Print Area				
GRAPHICS (U.S. OFFSET)									
	19.0"	x	25.0"	17.8"	x	22.4"	18.6"	x	22.8"
	20.0"	x	28.0"	18.8"	x	25.4"	19.6"	x	25.8"
	22.0"	x	26.0"	20.8"	x	23.4"	21.6"	x	23.8"
	23.0"	x	35.0"	21.8"	x	32.4"	22.6"	x	32.8"
	24.0"	x	29.0"	22.8"	x	26.4"	23.6"	x	26.8"
	25.0"	x	38.0"	23.8"	x	35.4"	24.6"	x	35.8"
	26.0"	x	38.0"	24.8"	x	35.4"	25.6"	x	35.8"
	27.0"	x	39.0"	25.8"	x	36.4"	26.6"	x	36.8"
	30.0"	x	42.0"	28.8"	x	49.4"	29.6"	x	39.8"
	32.0"	x	44.0"	30.8"	x	41.4"	31.6"	x	41.8"
	35.0"	x	45.0"	33.8"	x	42.4"	34.6"	x	42.8"
	36.0"	x	45.0"	34.8"	x	42.4"	35.6"	x	42.8"
	40.0"	x	50.0"	38.8"	x	47.4"	39.6"	x	47.8"
	42.0"	x	65.0"	40.8"	x	62.4"	41.6"	x	62.8"
	48.0"	x	65.0"	46.8"	x	62.4"	47.6"	x	62.8"
	50.0"	x	65.0"	48.8"	x	62.4"	49.6"	x	62.8"
	54.0"	x	65.0"	52.8"	x	62.4"	53.6"	x	62.8"
	60.0"	x	65.0"	58.8"	x	62.4"	59.6"	x	62.8"
U.S. ARCHITECTURAL									
A	9.0"	x	12.0"	7.8"	x	9.4"	8.6"	x	9.8"
B	12.0"	x	18.0"	10.8"	x	15.4"	11.6"	x	15.8"
C	18.0"	x	24.0"	16.8"	x	21.4"	17.6"	x	21.8"
D	24.0"	x	36.0"	22.8"	x	33.4"	23.6"	x	33.8"
E	36.0"	x	48.0"	34.8"	x	44.0"	35.6"	x	44.4"
U.S. ENGINEERING									
A	8.5"	x	11.0"	7.3"	x	8.4"	8.1"	x	8.8"
B	11.0"	x	17.0"	9.8"	x	14.4"	10.6"	x	14.8"
C	17.0"	x	22.0"	15.8"	x	19.4"	16.6"	x	19.8"
D	22.0"	x	34.0"	20.8"	x	31.4"	21.6"	x	31.8"
E	34.0"	x	44.0"	32.8"	x	40.0"	33.6"	x	40.4"
ISO-A									
A4	210	x	297 mm	180	x	232 mm	200	x	242 mm
A3	297	x	420 mm	267	x	355 mm	287	x	365 mm
A2	420	x	594 mm	390	x	529 mm	410	x	539 mm
A1	594	x	840 mm	564	x	775 mm	584	x	785 mm
	625	x	880 mm	595	x	815 mm	615	x	825 mm
A0	841	x	1189 mm	811	x	1124 mm	831	x	1134 mm
METRIC-DIN									
A4	250	x	337 mm	220	x	272 mm	240	x	282 mm
A3	337	x	460 mm	307	x	395 mm	327	x	405 mm
A2	460	x	634 mm	430	x	567 mm	450	x	579 mm
	610	x	860 mm	580	x	795 mm	600	x	805 mm
A1	634	x	881 mm	804	x	816 mm	624	x	826 mm
	860	x	1220 mm	830	x	1155 mm	850	x	1165 mm
A0	881	x	1229 mm	851	x	1164 mm	871	x	1174 mm
	1000	x	1414 mm	970	x	1349 mm	990	x	1359 mm
	1189	x	1682 mm	1158	x	1617 mm	1179	x	1627 mm
ISO-B									
B4	250	x	353 mm	220	x	288 mm	240	x	298 mm
B3	353	x	500 mm	323	x	435 mm	343	x	445 mm
B2	500	x	707 mm	470	x	642 mm	490	x	652 mm
B1	707	x	1000 mm	677	x	935 mm	697	x	945 mm

Margins

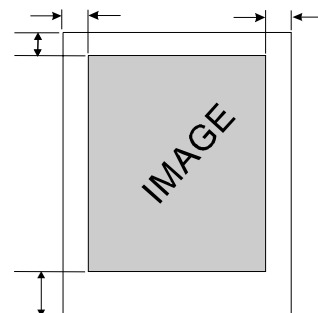
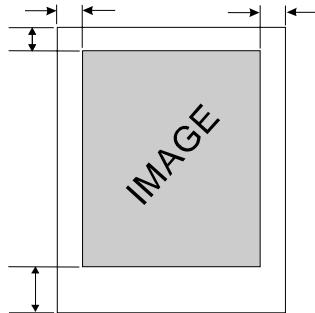
Margins can be set to Normal or Expanded. The Expanded setting expands the print area and decreases the margins.

Any part of the image that extends into the margin will be clipped. When the Margins option is set to Expanded, make sure that you align the media accurately using the guide on the right of the platen so that the ink doesn't exceed the edge of the media.

Cut sheet maximum printing area

Normal: 0.59" (15 mm) margin on each of three sides and 1.38" (35 mm) margin on the fourth side.

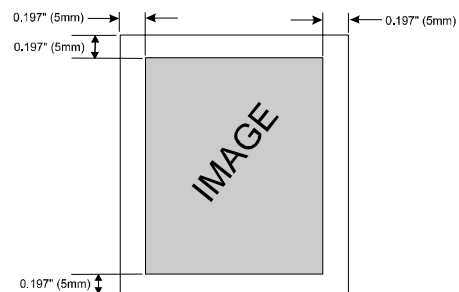
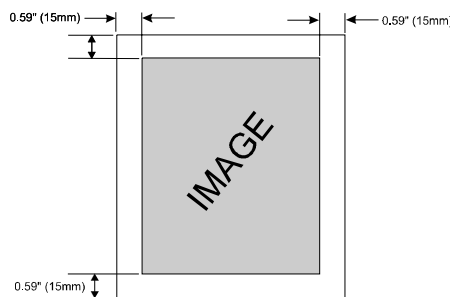
Expanded: 0.197" (5 mm) margin on each of three sides and a 1.38" (35 mm) margin on the fourth side.



Rollfeed maximum printing area

Normal: 0.59" (15 mm) margin on all sides.

Expanded: 0.197" (5 mm) margin on all sides.





To set margins

- 1 Press **Setup Menu/Paper Option Menu/Margins**.
- 2 Choose **Normal** or **Expanded**.
- 3 Press **OK**.

Auto-Load Delay

Auto-Load Delay lets you set the time between when the printer senses the media and when printing starts. This lets you manually reposition the media, if necessary. The default is 6 seconds, selectable from a range of 1-12 seconds.



To set auto-load delay

- 1 Press **Setup Menu/Paper Option Menu/Auto-Load Delay**.
- 2 Choose the delay time.
- 3 Press **OK**.

Auto-Cut

When the Auto-Cut option is set to On, the printer automatically cuts the media when the image is complete. To be sure the image is dry before cutting, turn on the dryer and/or specify an auto-cut delay time. See “Auto-Cut Delay” in this chapter for the procedure. You can select Cut from the control panel at any time to cut the media.

Note: Automatic cutting is disabled when the paper feed option is set to TAKEUP.



To set auto-cut

- 1 Press **Setup Menu/Paper Option Menu/Auto-Cut Menu/Auto-Cut**.
- 2 Choose **On** or **Off**.
- 3 Press **OK**.

Auto-Cut Delay

Auto-Cut Delay allows you to set a delay time before the printer automatically performs the Auto-cut function. This provides additional time for unattended prints to dry. In addition, you may want to delay auto-cut depending on the media you are using, the ambient temperature and the humidity. Auto-Cut Delay values range from 0 to 55 seconds in five second intervals and 1 to 60 minutes in one minute intervals. When the delay time has expired, the printer rolls or cuts the image and begins printing the next image in the buffer. Auto-Cut Delay is ignored when Auto-cut is set to Off.



To set Auto-Cut Delay

- 1 Press **Setup Menu/Ink OptionMenu/Auto-Cut Menu/Auto-Cut Delay**.
- 2 Choose a time.
- 3 Press **OK**.

Delay Status

Delay Status allows users to view the time remaining before Auto-Cut and cancel the remaining delay time, if desired. A countdown timer displays time left before Auto-Cut in minutes and seconds. Reset Counter forces the count to zero and the printer initiates the Auto-Cut immediately.



To reset counter to zero and initiate Auto-Cut

- 1 Press **Setup Menu/Ink OptionMenu/Auto-Cut Menu/Delay Status**.
- 2 Choose **Reset Counter**.
- 3 Press **OK**.

Save Media

When the Save Media is On (the default), the media advances only as far as needed to print the image. With the Save Media option turned off, the printer advances the full print area of the loaded media. For example, if a 36 inch roll is loaded, the printer advances the length of the print area for a standard 36 x 48" sheet even if the printed image is only 30 inches long.



To turn off Save Media

- 1 Press **Setup Menu/Paper Option Menu/Save Media**.
- 2 Choose **Off**.
- 3 Press **OK**.

Defining user setup

You can save the options you use most frequently so you don't have to reconfigure the printer each time you print an image. You can define up to eight different combinations of options and save them with a user number ranging from 1-8. Select the user number you want to use before sending an image to the printer. If your printer driver has host-controlled settings, the user setup may be overridden. If possible, disable the driver control settings.

You can save settings for the following options:

- Cut On or Off • Auto-Wipe On or Off • Normal or Expanded Margins
- Media Standard • Monochrome or Color • Save Media On or Off
- Auto-Cut Delay • Quality Mode • Dryer Auto/Off
- Cartridge Set • Print Mode



To save user setup

- 1 Press **Setup Menu/User Setup Menu/Save User**.
- 2 Scroll to the number for the user settings.
- 3 Press **OK**.



To use a previously saved user setting

- 1 Press **Setup Menu/User Setup Menu/Select User**.
- 2 Scroll to the number for the user settings (i.e. user 1, user 2, etc.) to use.
- 3 Press **OK**.

Choosing a language

Printer menus and options can be displayed in the following languages: English, German, French, Italian, Portuguese, Spanish, simplified and traditional Chinese, Japanese, and Korean.



To choose a language

- 1 Press **Setup Menu/User Setup Menu/Language**.
- 2 Choose the language to display.
- 3 Press **OK**.

Choosing ink options

Ink Preheat

Cartridge heat settings are optimized for KODAK PROFESSIONAL media being printed in a standard office environment. If you are experiencing banding, poor fills, or over dot gain, and you have tried all other means to correct these conditions, you may want to experiment with the ink preheat settings. These will vary depending on the ambient temperature where the printer is located and the media and ink used.

Defaults for the heater setting are determined by the ink type in use. The printer determines this by reading the chip on the back of each cartridge. When you adjust the ink settings, you are increasing or decreasing the heat from the default temperature. Pressing the **Previous** and **Next** buttons increases or decreases the temperature. When you have reached the limits of the temperature range, the panel will display either MAX or OFF. These settings are saved in the printer. If you change to a different type of ink, you may need to change the heater settings to accommodate the new ink type.

If you are working in a cold or dry environment, try turning the heat up for a larger dot size. If the heat is turned up too far, the ink may run or sputter. If you are working in a humid or hot environment, turn the heat down for a smaller dot size.

You can set preheat values for each cartridge in the Left and Right cartridge sets. The following example sets the preheat value for cartridge 4 of the Left cartridge set.



To set the ink preheat value for cartridge 4 of the left cartridge set

- 1 Press **Setup Menu/Ink Option Menu/Ink Preheat Menu/Left/4 Preheat**.
- 2 Choose a preheat value.
- 3 Press **OK**.

The following example sets the preheat value for cartridge Y of the Right cartridge set.



To set the ink preheat value for cartridge Y of the right cartridge set

- 1 Press **Setup Menu/Ink Option Menu/Ink Preheat Menu/Right/Y Preheat**.
- 2 Choose a preheat value.
- 3 Press **OK**.

Auto-Wipe

When set to On, the cartridge jet plates are periodically wiped during printing. This eliminates dripping during heavy continuous usage. However, if you are having problems with banding, you can sometimes solve the problem by setting the wiper to Off (the default).



To turn on the wiper

- 1 Press **Setup Menu/Paper Option Menu/Auto-Wipe**.
- 2 Choose **On**.
- 3 Press **OK**.

Dryer

The dryer helps to dry ink. When set to Auto, the dryer automatically turns on, samples the ambient temperature/humidity and calculates the required dryer output temperature. When set to On, the dryer is at maximum dryer output. Ambient temperature and humidity are ignored and the dryer is at maximum output for every print job. Choices are Off, On and **Auto**. **Note:** When using the dryer, Auto is the recommended setting. It reduces energy consumption and reduces the amount of heat generated by the dryer.



CAUTION: Never open the dryer. There are no user serviceable parts inside. Refer servicing to qualified service personnel only.



CAUTION: This assembly emits heat by radiation.



CAUTION: Once the dryer is plugged in, there is continuous power to the dryer, **even when the printer is turned off.**

DISCONNECT POWER CORD BEFORE SERVICING!



To set the dryer

- 1 Press **Setup Menu/Ink Option Menu/Dryer**.
- 2 Choose **Auto**.
- 3 Press **OK**.

LCD Contrast

The LCD Contrast function lets you adjust the brightness of the control panel. The range is 1-8, where 1 is less contrast. The default is 4. Note that if brightness is set too high, you may not be able to see the text displayed on the control panel.



To set LCD contrast

- 1 Press **Setup Menu/User Setup Menu/LCD Contrast**.
- 2 Choose the contrast value.
- 3 Press **OK**.

Printing the settings

Pressing the **SetupMenu/User Setup Menu/Print Settings** buttons causes the printer to print a listing of its current settings. Be sure to have paper loaded before you start.

Returning to the default settings

Pressing the **SetupMenu/User Setup Menu/Init Settings** buttons returns all printer options to the factory defaults. All saved user settings are lost. The following table shows the printer defaults.

Printer Default Settings

USER SETTINGS	DEFAULT	OTHER OPTIONS
COLOR MODE	COLOR	MONO, GRAY
CARTRIDGE SET	2x4	1x4 RIGHT, 1x4 LEFT
QUALITY MODE	PHOTO	PRODUCTION, ENHANCED, USER
DOTS PER INCH	600	300
PRINT PASSES	4 (1x4) 3 (2x4)	1, 2, 3, 4, 6, 8, 10 (1x4) 1, 2, 3, 4, 5 (2x4)
CARRIAGE SPEED	10	1-10
PRINT DIRECTION	BI	UNI
AUTO-LOAD DELAY	6	1-12 SEC.
MEDIA STANDARD	ALL	US ENGR, US ARCH, ISO A, MET ALL, US ALL, GRAPHICS, MET OVER A, ISO B, SPECIAL
MARGINS	NORMAL	EXPANDED
AUTO CUT	ON	OFF
AUTO-CUT DELAY	0	0:10, 0:20, ... 60:00
SAVE MEDIA	ON	OFF
CALIB XY	ON	OFF
SELECT USER	1	1 TO 8
SAVE USER	1	1 TO 8
UNITS SELECT	ENGLISH	METRIC
LANGUAGE	ENGLISH	GERMAN, FRENCH, ITALIAN, SPANISH, PORTUGUESE, JAPANESE. CHINESE, KOREAN
DRYER	OFF	AUTO, ON
AUTO WIPE	OFF	ON
SYSTEM SETTINGS	DEFAULT	OTHER OPTIONS
SUPPLY TYPE	TAKE-UP	SHEET, ROLL, ROLL2
LCD CONTRAST	4	1-8
END OF MEDIA	FEEDER STOP	NORMAL
MEDIA COUNTER	0	1-500 FT.
CALIBRATION SETTINGS	DEFAULT	OTHER OPTIONS
DEADBAND (KCMY1234)	44	0...196
SLOW DEADBAND	0	-2...+2
VERTICAL (4321YMC)	0	-9...+9
HORIZONTAL (4321YMC)	0	-9...+9
PAPER AXIS	33.00	32-34

This chapter describes the setting of printing parameters generally used with vector-based files, including palette selection, printer control, rotation, reprints, nesting, ink reduction and ink limiting.

KODAK's implementation of HP-GL/2 supports vector/raster merge and conforms to "The HP-GL/2 and HP RTL Reference Guide, Third Edition" by Hewlett-Packard Company (Addison-Wesley, 1997, ISBN 0-201-31014-7). Please refer to this guide for detail on HP-GL/2 commands.

Printing vector data

When printing vector data, you can control certain options from your software application, or you can assign control to the printer and set its options. Whether you assign control to the software (the default) or the printer depends on your personal preferences. You might choose to override software control because the software is not providing the features you want.

Accessing HP-GL/2 features

The following functions are available from the HP-GL/2 menu: palette select, printer vs. software control, rotation, reprints, nesting, ink reduction and ink limit.



To access HP-GL/2 features

- 1 Press **Setup Menu/HP-GL/2 Menu**.

The HP-GL/2 menu displays with further options.

● <i>Palette Select</i>	<i>Nesting Menu</i> ●
● <i>Control</i>	<i>Reprints</i> ●
● <i>Rotation</i>	<i>Ink Limit</i> ●
● <i>Ink Reduction</i>	Exit ●

Palette select

Palette select lets you choose either the HP-GL/2 or AutoCAD palette. Both palettes allow 256 active colors with eight colors predefined. The predefined colors for each palette are shown in the following table.

	HP-GL/2	AutoCAD
Pen 0	White	White
Pen 1	Black	Red
Pen 2	Red	Yellow
Pen 3	Green	Green
Pen 4	Yellow	Cyan
Pen 5	Blue	Blue
Pen 6	Magenta	Magenta
Pen 7	Cyan	Black



To choose a palette type

- 1 Press **Setup Menu/HP-GL/2 menu/Palette Select**.
- 2 Choose either **AutoCAD** or **HP-GL/2**.
- 3 Press **OK**.

Control

Control determines whether certain printing parameters are set in the software application or overridden by the printer's front panel. Control overrides the following parameters of the HP-GL/2 header file: repeat plot (RP) and enable auto cutter (EC).

Repeat Plot: With Control set to Printer, the printer will ignore RP commands in the plot file and only print one plot. From the printer's front panel you can specify additional copies using the Reprints menu.

Enable Auto Cutter: With Control set to Printer, the printer will ignore EC commands in the plot file and will not automatically cut after each plot. From the printer's front panel, you can enable automatic cutting or initiate a command for a single cut.

- ✓ Do not override software control when sending merged raster/vector data to the printer.



To set control

- 1 Press **Setup Menu/HP-GL/2 menu/Control**.
- 2 Choose either **Software** or **Printer**.
- 3 Press **OK**.

Rotation

The printer automatically prints an image with the long side on the paper axis. To better fit images and save media, you can use the Rotation option to turn vector files counter-clockwise 90 degrees at a time. If the rotation specified won't fit on the media or contains raster images, it will not be rotated. When the Rotate value is set to AUTO, the algorithm will automatically rotate the plot if it determines that the rotation will save media (regardless of whether Nesting is enabled). If Rotate is set to 0, the plot will not be rotated. The Control function does not override the RO command in the plot file.

Note: Rotation is supported for HP-GL/2 files only. It is not supported for RTL files.



To rotate the image

- 1 Press **Setup Menu/HP-GL/2 menu/Rotation**.
- 2 Choose the rotation angle (0, 90, 180, 270, auto).
- 3 Press **OK**.

Reprints

You can print up to 99 copies of a specific vector file. When Reprint is set to 0, only one image is printed.



To make multiple prints

- 1 Press **Setup Menu/HP-GL/2 menu/Reprints**.
- 2 Enter the number of reprints (0 to 99).
- 3 Press **OK**.

Ink reduction

Ink reduction lets you reduce the percentage of ink laid down by the printer. This feature applies only to HPGL/2 format images (vector-based images) and has no effect on continuous tone images. It is especially useful for images with large amounts of printed area and helps to avoid bleeding or oversaturating the media. It does, however, change the appearance of colors, so you may want to run a small test print.



To set ink reduction

- 1 Press **Setup Menu/HP-GL/2 Menu/Ink Reduction**.
- 2 Choose a reduction percentage - **0%, 12.5, 25%, 37.5, or 50%**.
- 3 Press **OK**.

Nesting

Nesting allows the user to save media by printing multiple plots along the horizontal width of the media. This feature makes the most efficient use of consumables and reduces the time required to print multiple plots.

When nesting is active, HP-GL/2 plots will be stored within the printer, accumulating in a *nest*. Printing will only begin when a nest becomes full, when a nesting timeout occurs, if printer memory is exhausted, or when a plot that is incompatible with the current nest is received.

A nest is full when the printer determines that no further jobs can fit across the page.

Nest timeouts are governed by the Nest Time parameter, which is set via the printer's front panel.

If the printer runs out of memory, the current nest will be printed immediately, so that memory may be reclaimed for use by new plots.

An incompatible plot is either a non-HP-GL/2 plot or an HP-GL/2 plot which has different job characteristics than the current nest, such as quality, dpi, or margins. If any of the following plot parameters are different between one plot and the next, the last plot will be incompatible with the current nest, causing the nest to begin printing immediately.

Parameters which are monitored for Nest compatibility:

- Print quality;
- Number of passes;
- Print direction;
- Speed;
- Color mode;
- DPI;
- Dry time;
- Margins;
- Wipe on/off; and
- Media Save.

The following parameters will not affect nesting:

- Ink limiting;
- Replots;
- If Auto Rotation is enabled, then the nesting algorithm is free to rotate the plot if it determines that doing so will save media. Plots are sequentially fitted across the page from right to left; and
- The HP-GL/2 EC command can be used to control cutting. If any plot in a nest has the cutter enabled, the plotter will cut after the nest.



To enable nesting

- 1 Press **Setup Menu/HP-GL/2 menu/Nesting Menu/Nest Enable**.
- 2 Choose Nest **On** or **Off**.
- 3 Press **OK**.

Nest wait time

Nesting Wait Time is the amount of time the printer waits for the next plot to fill the current nest.

The printer will begin printing whenever the printer has been idle for the specified time interval. The time is reset whenever a print job is received.



To define nesting wait time

- 1 Press **Setup Menu/HP-GL/2 menu/Nesting Menu**.
- 2 Choose **Nest Enable/On**.
- 3 Press **OK**.
- 4 On the Nesting menu, choose **Nest Time**.
- 5 Choose the Nest Time (**30 seconds, 1 minute, 2 minutes**).
- 6 Press **OK**.

Ink limit

The printer can assign an ink limit to polygon fills and wide vectors. This helps prevent bleeding when printing on inexpensive inkjet media. The default for this option is On. If you are using high quality media, this option may not be needed and can be turned off.



To enable the ink limit

- 1 Press **Setup Menu/HP-GL/2 menu/Ink Limit**.
- 2 Choose **On**.
- 3 Press **OK**.

HP-GL/2 Test File

To assist in diagnosing potential problems with your printer, we have placed an HP-GL/2 test file in the printers ROM memory. The colors that print on the test file are the RGB values for those colors as defined in AutoCAD. Settings for Ink Reduction and Ink Limiting have no effect on this file. All other printer options such as Number of Passes and Carriage Speed are available.



To print the test file

- 1 Press **Utility Menu/Service Menu/Test Print**.

Installing additional memory

A

The 4800 Series inkjet printers ship with 64 MB of RAM and are upgradable to a maximum of 256 MB. Additional memory helps to free the host computer more quickly.

Acceptable DIMM sizes

Printer memory may be upgraded by installing PC133 (or faster) 168-pin DIMMs (**D**ual **I**n-line **M**emory **M**odules). The printer will accept 64 MB, 128 MB or 256MB DIMMs.

DIMM installation

The DIMM is located on the MPCB (**M**ain **P**rinted **C**ircuit **B**oard) inside the right cover. The MPCB comes with one DIMM slot that has a 64 MB RAM DIMM installed on the board. The following procedures describe how to remove the right cover, remove the currently installed DIMM, install a new DIMM and replace the cover. You will need a #2 Phillips screwdriver to complete the procedures.

! ALWAYS UNPLUG THE POWER CORD BEFORE BEGINNING.

! To avoid static damage to the printer, never touch the circuit board or its components without first touching the bright metal portions of the printer. Static damage is more likely when the relative humidity is low. If possible, wear a grounding strap when touching the circuit board.



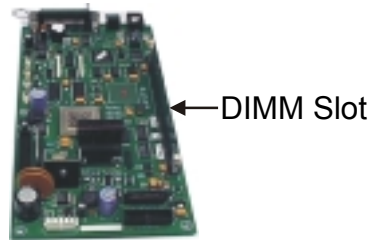
To remove the right cover

- 1 Disconnect the power and the interface cables.
- 2 Remove the printer's top cover.
- 3 Remove the three screws under the right side of the printer which attach the right side cover and the two screws which attach the cover to the right plate.
- 4 Slide back the pin that holds the right cover to the rear cover.
- 5 Move the right cover, being careful to clear the parallel port on the back of the unit.
- 6 Carefully disconnect the ribbon cable from the connector on the PC board and the other cable that goes to the cover.



To remove the DIMM

- 1 Facing the top of the DIMM, push the side clips gently away from the DIMM.

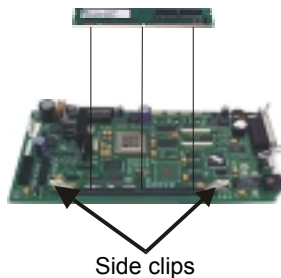


- 2 The DIMM should pop up. Pull the DIMM straight up out of the slot.



To install the new DIMM

- 1 With the large label on the DIMM facing the away from the board, insert into the slots on the side clips and push straight down. Next push the left side of the DIMM down while pulling the clip up over the notch on the DIMM. Repeat on the right side. Make sure the DIMM is fully seated.



- 2 Carefully reconnect the ribbon cable harness to the connector on the PC board. Reattach the other connectors removed earlier.
- 3 Reinstall the right cover and top cover.

Technical information

B

MEDIA TYPES:

Photo paper, paper matte, drafting films,
and specialty.

MEDIA ROLL PARAMETERS

Inner roll core: 2" and 3"
Max. outside roll diameter: 6"
Max. roll width: 60", 42"

RESOLUTION:

600 x 600 dpi
300 x 300 dpi RTI

FEATURES:

Rollfeed with cutter
Power feed and takeup
8 user-savable settings
Power PC 50MHZ processor
ink cartridges (8)
500 ml ink reservoirs (8)
Two sets of ink lines on one cartridge
set(12 lines total)
Ink priming system

LINE LENGTH ACCURACY:

+/- 0.2% in paper and carriage axis using
roll feed, 4 mil drafting matte film.

Image frame length (X-axis) variation +/-
0.2% and width (Y-axis) variation +/-0.06%
+/- 0.024" (.6mm).

BUFFER:

One 168-pin PC133 DIMM slot.
64 MB standard
User upgradeable to 128 MB or 256 MB

INTERFACES:

Bidirectional Parallel (IEEE 1284)
10/100BaseT (RJ45 connector)

POWER:

90-264 VAC 47-63 Hz

Consumption:

20 W Idle
185 W Typical
285 W Maximum (printer only)
1485 W Maximum (printer and dryer)

OPERATING ENVIRONMENT:

65° - 85°F (18° - 30°C)
20-70% RH, Non-condensing

STORAGE ENVIRONMENT:

40° - 95°F (4° - 35°C)
5-80% RH, Non-condensing

CERTIFICATIONS:

Safety

CSA, CSE/NRTL,
(equivalent to UL1950)
TUV GS
EN 50 082-1
EN 60 950
UL1950
NOM-019-SCFI-1993
IEC 950
AS/NZS 3260

EMI

FCC Class A
CSA C108.8
EN 55 022 Class A
CE Mark
CISPR 22- Class A
AS/NZS 3548
VCCI Class A

Made in the U.S.A.

DIMENSIONS

	60" model	42" model
Height (platen above floor)	44" (1.12m)	44" (1.12m)
Width	111" (2.82m)	93" (2.37m)
Depth	28" (0.71m)	28" (0.71m)
Weight	165 lbs.	150 lbs.
Print width	up to 59.6" printable	up to 41.6" printable

This section contains an overview of the printer's menu tree. In the figures that follow, items in *italics* indicate that selecting the option gives access to a menu with further options. Items in **bold** are the default option.

Main menu at a glance

Main Menu	Load Media
	Cut
	Pause
	Reset
	<i>Feed Media Menu</i>
	Forward
	<i>Media Counter</i>
	<i>Display Counter</i>
	Backward
	<i>End of Media</i>
	Exit
	<i>Setup Menu</i>
	<i>Print Mode Menu</i>
	<i>Paper Option Menu</i>
	<i>HP-GL/2 Menu</i>
	<i>User Setup Menu</i>
	<i>Ink Option Menu</i>
	Exit
	<i>Utility Menu</i>
	Prime
	<i>Access Menu</i>
	<i>Color Calib Menu</i>
	<i>Calibration Menu</i>
	Display Settings
	Print Settings
	<i>Service Menu</i>
	Exit

Main menu



LOAD MEDIA	moves media into or away from the platen.
CUT	cuts media.
FEED MEDIA MENU	provides access to further options for moving the media forward or backward; setting end of media; and entering/displaying media length values.
PAUSE	stops printing and allows the operator to cancel print jobs, reinitialize the printer, or examine the print job. Pressing Pause again will start printing.
RESET	clears the print buffer. When cancelling a print, first remove it from the computer's print queue, then press the Reset button on the printer.
SETUP MENU	provides access to further submenus for setting printing options.
UTILITY MENU	provides access to further submenus for calibration and other functions.

Feed media menu

● Forward	Backward ●
●	●
● <i>Media Counter</i>	<i>End of Media</i> ●
● <i>Display Counter</i>	Exit ●

Forward	advances media toward the front of the printer.
Media Counter	provides access to additional options where the length of a roll of media can be entered and the media counter reset.
Display Counter	displays a screen where the current value of the media length can be viewed and printed on the media.
Backward	moves media toward the back of the printer.
End of Media	provides access to another screen where the End of Media can be redefined to look for an abnormally long absence of the loop of media that occurs between the feeder roll and the platen.
Exit	returns to main menu.

Setup menu at a glance

Setup *Print Mode Menu*

<i>Color Mode</i>	Color , mono, gray
<i>Quality Mode</i>	User, Production, Photo , Enhanced
<i>Dots per Inch</i>	300, 600
<i>Cartridge Set</i>	1x4 Right, 1x4 Left, 2x4
<i>Print Passes</i>	1, 2, 3, 4 , 6, 8, 10 (For 1x4 cartridge sets)
	1, 2, 3 , 4, 5 (For 2x4 cartridge set)
<i>Carriage Speed</i>	1-10, 10
<i>Print Direction</i>	Uni, Bi
<i>Exit</i>	

Paper Option Menu

<i>Supply Type</i>	Sheet, Roll, Roll2, Take-up
<i>Media Standard</i>	All , US_Engr, US_Arch, ISO_A, M_DIN, ISO_B, Special, MET OVER A, Graphics, US_All, Metric_All
<i>Margins</i>	Normal , Expanded
<i>Auto-Load Delay</i>	1-12, 6
<i>Auto-Cut Menu</i>	Auto-Cut, Auto-Cut Delay, Delay Status
<i>Save Media</i>	On /Off
<i>Exit</i>	

HP-GL/2 Menu

<i>Palette Select</i>	HP-GL/2, AutoCAD
<i>Control</i>	Software, Printer
<i>Rotation</i>	Auto, 0, 90, 180, 270
<i>Ink Reduction</i>	0% , 12.5%, 25%, 37.5%, 50%
<i>Nesting Menu</i>	Nest Enable, Nest Time
<i>Reprints</i>	0-99
<i>Ink Limit</i>	On, Off
<i>Exit</i>	

User Setup Menu

<i>Select User</i>	1-8, 1
<i>Save User</i>	1-8, 1
<i>Units Select</i>	English , Metric
<i>Language</i>	English , German, French, Italian, Spanish, Portuguese, Korean, Japanese, Simplified Chinese, Traditional Chinese
<i>Init Settings</i>	
<i>Print Settings</i>	
<i>LCD Contrast</i>	1-8, 4 (1 is less contrast)
<i>Exit</i>	

Ink Option Menu	
<i>Ink Preheat Menu</i>	Left, Right
<i>Dryer</i>	Auto/ Off /On
<i>Auto-Wipe</i>	On/ Off
Exit	

Exit

Setup menu



Print Mode Menu	provides access to options for color, quality, cartridge set, print passes, carriage speed and print direction.
Paper Option Menu	provides access to options for loading media, margins, media selection and other media features.
HP-GL/2 Menu	provides acces to options for setting HP-GL/2 features.
User Setup Menu	provides access to options for defining and saving user settings.
Ink Option Menu	provides access to options for setting ink preheat, dryer on/off, and dry time.
Exit	returns to the main menu.

Print Mode Menu

●	<i>Color Mode</i>	<i>Print Passes</i>	●
●	<i>Quality Mode</i>	<i>Carriage Speed</i>	●
●	<i>Dots per Inch</i>	<i>Print Direction</i>	●
●	<i>Cartridge Set</i>	Exit	●

Color mode	provides access to a further menu to select color , monochrome, or grayscale printing.
Quality mode	provides access to a further menu to select the pre-defined or user-defined quality modes.
Dots per inch	provides access to a further menu to select print resolution.
Cartridge set	provides options for selecting the cartridge set to use for printing. 1x4 Right, 1x4 Left, 2x4
Print passes	provides access to a further menu to select 1, 2, 3, 4 , 6, 8 or 10 print passes for 1x4 cartridge sets, or select 1, 2, 3 , 4 or 5 print passes for 2x4 cartridge set. More passes = better quality.
Carriage speed	provides access to a menu for choosing carriage speed in a range 1-10. Default = 10 .
Print direction	provides access to a further menu to select whether the printer will print bi-directional or uni-directional (one direction).
Exit	returns to the Setup menu.

Paper Option Menu

●	<i>Supply Type</i>	<i>Auto-Cut Menu</i>	●
●	<i>Media Standard</i>	<i>Save Media</i>	●
●	<i>Margins</i>		●
●	<i>Auto-Load Delay</i>	Exit	●

Supply type	provides access to a further menu to select the paper feed mode: roll, roll2, sheet, or takeup .
Media standard	provides access to a further menu to select the media standard: All , US_Engr, US_Arch, ISO_A, Met over A, ISO_B, Special, Graphics, US_All, Metric_All.
Margins	provides access to a further menu to change the available plot area based on the margin type elected. Select Normal or Expanded margins.
Auto-Load Delay	provides access to a further menu to change the delay between when the media is positioned for loading and when loading occurs. This allows users to adjust the media if necessary. Select 1-12 seconds. Default = 6.
Auto-Cut Menu	provides access to a further menu to activate Auto-Cut, set and Auto-Cut delay time and check delay status.
Save Media	provides access to a further menu to turn Save media On or Off. When set to On, printing will stop at the end of the image rather than scrolling out the full paper size.
Exit	returns to the Setup menu.

HP-GL/2 Menu

●	<i>Palette Select</i>	<i>Nesting Menu</i>	●
●	<i>Control</i>	<i>Reprints</i>	●
●	<i>Rotation</i>	<i>Ink Limit</i>	●
●	<i>Ink Reduction</i>	Exit	●

Palette Select	provides access to a further menu to select an AutoCAD color palette or a generic HP-GL/2 palette.
Control	determines whether certain printing parameters are set in the software application or overridden by the printer's fron panel display.
Rotation	provides access to a further menu to enable rotation and set the rotation angle.
Ink Reduction	allows the setting of a percentage reduction in the amount of ink that is laid down on the paper.
Nesting Menu	provides access to a further menu that controls nesting.
Reprints	controls the number of copies that are printed.
Ink Limit	limits the amount of ink that is used in polygon fills and wide vectors.
Exit	returns to the Setup menu.

User Setup Menu

● <i>Select User</i>	Init Settings	●
● <i>Save User</i>	Print Settings	●
● <i>Units Select</i>	<i>LCD Contrast</i>	●
● <i>Language</i>	Exit	●

Select user	provides access to a further menu to select a previously saved user configuration. Default = User 1.
Save user	provides access to a further menu to save the current printer configuration to the selected user number. Default = User 1.
Units select	provides access to a further menu to choose the calibration units: English or Metric.
Language	provides access to a further menu to select the language used for the display. Choose from English , German, French, Italian, Spanish, Portuguese, Japanese, Chinese (traditional and simplified), Korean.
Init settings	returns the printer to its default settings. All previously saved options are erased.
Print settings	prints the current printer settings.
LCD contrast	lets you select the contrast level of the display. Range is 1-8, 4 (default) (1 is less contrast)
Exit	returns to the Setup menu.

Ink Option Menu



Ink preheat	provides access to a further menu to set the ink preheat value for each cartridge.
Dryer	provides access to a further menu to turn the dryer Off or Auto.
Auto-Wipe	provides access to a further menu to turn the Auto-wipe function On or Off . When on, the cartridges are wiped during printing.
Exit	returns to the Setup menu.

Utility menu at a glance

Prime

Access Menu

Access Left

Access Right

Access Home

Color Calib Menu

Vertical 4321YMC

Horizontal 4321YMC

Vert Calib Test

Horiz Calib Test

Calibration Menu

Use Paper Calib **On/Off**

Paper Axis Test

Color Db Menu Left, Right, Color Db Test

Paper Axis 32.00 - 34.00 (**33.00 default**)

Open Jet Menu Left, Right, Print Jet List

Display settings

Print settings

Service menu

Calibration Menu *Deadband Test, Slow Db Test, Single Line Test, All Lines Test, Slow Deadband*

Diagnostics Menu *Servo PWM Test*, Servo Cycle Test*, Accessory Menu*, Carriage Test*, Color Test Menu, Continuous Test**

About

Cartridge Info

Test Print

Exit

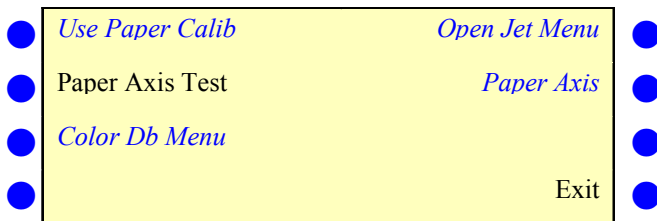
* tech support only

Utility menu

● Prime	Display Settings	●
● <i>Access Menu</i>	Print Settings	●
● <i>Color Calib Menu</i>	<i>Service Menu</i>	●
● <i>Calibration Menu</i>	Exit	●

Prime	prints the prime pattern.
Access Menu	provides access to a further menu for options to move the ink carriage away from the service station to access left and right cartridge sets for installation/replacement of cartridges and the media cutter.
Color Calib Menu	provides access to further menus for printing the color calibration test pattern and for entering values determined by examining the test patterns.
Calibration Menu	provides access to a further menu for calibration options and diagnostics.
Display Settings	displays information such as paper and page width and height, on time, and cumulative plot time.
Print Settings	prints information such as media size, firmware revision, RAM size, and plot hours.
Service Menu	all items except the Color Test are for use by technical support.
Exit	returns to the main menu.

Calibration Menu



Use Paper Calib	provides access to a further menu in which you can set this function On or Off .
Paper Axis Test	prints the paper axis test pattern.
Color Db Menu	provides access to a further set of menus in which you can print the color deadband test pattern and set deadband velocity compensation for each cartridge.
Open Jet Menu	provides access to a further set of menus in which you can print the jet status pattern and set the compensation for jets in each cartridge.
Paper Axis	provides access to a further menu in which to enter values determined by examining the paper axis test pattern.
Exit	returns to the utility menu.

Service Menu

●	<i>Calibration Menu</i>	About	●
●	<i>Diagnostics Menu</i>	Cartridge Info	●
●		Test Print	●
●		Exit	●

Calibration Menu	provides access to calibration options.
Diagnostics Menu	provides access to a further set of menus for performing diagnostics (tech support only) and for printing the color test.
About	provides information about the printer's firmware version, BROM, RAM and printer size.
Cartridge Info	provides information about the type and color of ink in each cartridge stall, and the extent to which the cartridge is used. Cartridge usage is displayed in milliliters. The display changes in 2ml increments. 500ml indicates that the cartridge should be replaced. When 1280ml is displayed, the cartridge will stop functioning.
Test Print	automatically prints a test file stored in ROM on the printer. Use only under direction of technical support.
Exit	returns to the utility menu.

These display messages are helpful in determining the status of the printer and possible corrective action when operation does not appear to be normal.

Error Messages

Error messages consist of the message “Internal ERROR: Shutdown” on line 2 of the display. On line 4, a specific message will appear. If you cannot clear the error, record the message and the sequence of events leading to the message so that you can describe the problem to technical support personnel.

If the “Carriage Axis Failure” message is displayed, cycle the printer's power to clear the error.

Cartridge Errors

The printer automatically performs tests on the cartridges and uses the information to improve image quality, monitor cartridge life, and update the user with system status. Some tests are performed between prints and require no user input, while others require user input.

The following table shows cartridge-related error messages.

Error Message	Corrective Action
Unrecognized cartridge	Be sure the cartridge is the correct cartridge for your printer model. Your printer will not work with cartridges from other models. Remember, the printer is reading the value programmed into the chip on the cartridge. Replace the cartridge if necessary.
Cartridge end of life attained.	Replace cartridge. You can check cartridge status by choosing Cartridge Info from the Service menu. Cartridge usage is displayed in milliliters (ml). The cartridge is warranted for 500ml of ink throughput. When 1280ml is displayed, no further printing occurs until the cartridge is replaced.
Unrecognized ink type.	Be sure the cartridge is the correct cartridge for your printer model. Your printer will not work with cartridges from other models. Ink type information is stored on the cartridge chip. If you are using a new type of ink, which has been introduced since you purchased your printer, you will need to upgrade the printer's firmware to accommodate the new ink type.

To clear the error, turn the printer off and then on again. Press **Utility Menu/Service Menu/Cartridge Info** to determine the cartridge for which the error message is displayed. Press **Utility Menu/Access Menu/Access Left** or **Access Right** to move the carriage to the position which allows replacement of the ink cartridges. Check to make sure you have the correct cartridge for your printer model installed in each position, that they all contain the same type of ink and all cartridges are installed properly. Install new cartridges if necessary.

This appendix contains valuable information to help you solve the most common printer problems. The problems addressed are divided into these types:

- Printer health
- Print quality
- Data transfer
- Application software

Troubleshooting quick list

Many common problems can be solved by checking for just three items:

- Is the printer connected to a good power source?
- Does the printer driver software match the emulation selected on the printer?

Isolating problems

You can quickly isolate problems to either the printer, computer/printer interface, or application software using the following procedure:

1. Turn the printer OFF, then ON.
2. Load media, then run a prime to assure that all jets fire. (See the Quick Start Guide.)
3. Perform a color calibration. (See the Quick Start Guide.)

If your printer fails during any of the above steps, call your reseller or call Technical Support. Otherwise, continue with the steps that follow.

4. Disconnect the print server parallel cable attached to the parallel port on the back of the printer. Connect an IEEE 1284 parallel cable from the printer's parallel port to the parallel port on your PC.
5. Send a sample print directly to the printer through the parallel port. For example, on Windows 95/98, type: `copy /b <filename>.rtl lpt1`. On Windows NT type: `print /d:lpt1 <filename>`.
6. If your computer is running on a network, login and copy the sample file to the printer over the network.
7. If steps 5 or 6 fail, repeat them using another computer.

If any of the previous steps failed, your printer may not be correctly connected to your computer and/or network. Contact your network administrator or your reseller. Otherwise, continue with the steps that follow.

8. Print directly to the printer from several software applications.
9. If you are networked, login and try printing from several software applications.
10. If steps 8 or 9 fail, repeat them using another computer or remove from the network and test standalone.

If one application fails, but others print successfully, that can indicate a problem with a specific software package. Call technical support of the failed product. If all the applications fail, determine what they have in common; for example, a RIP box or Windows driver. Call technical support of the particular vendor.

Printer Health

Printer will not turn on

Make sure the power cord is securely attached to the printer and plugged into an operating outlet.

Make sure the power switch is turned on.

Make sure total power load does not exceed main power circuit breaker limits for that power line.

Printer intermittently reboots

Clean and reseal memory DIMMs.

Test and replace memory DIMMs. (See Appendix A of this guide.)

Check that power is coming to the printer.

Disconnect dryer AC power cable.

Display does not come on

Check that the power cord is plugged in and the printer switch is turned on.

Push any control panel button. The display should come on.

File will not print

If you are using a parallel cable, be sure it meets the specifications of IEEE 1284.

Check your electrical connections.

From your software application, print to a file and send the file to the printer in DOS using the DOS Copy command. At the DOS prompt, type `COPY /b filename portname` (LPT or COM port).

Slow printing under Windows

Windows applications naturally print slower than DOS applications. Be sure the Windows Print Manager is turned OFF.

Takeup roll doesn't turn

Be sure the paper feed option is set to Takeup.

Takeup roll doesn't stop turning

Check that the take-up sensor is not blocked. There should be nothing between the take-up sensor and media.

Automatic cutter doesn't work or tears the paper

Make sure the Auto-Cut option is set to ON.

Make sure Media Supply Type is set to Roll or Roll2.

Make sure the cutter is properly installed. (See the Quick Start Guide.)

The cutter may be dull. Replace the cutter.

TURN POWER OFF and clean the inside of the black belt using alcohol and a lint-free cloth. Push the carriage back and forth to access all areas of the belt. Manually push the carriage all the way to the left to force the cutter to drop. Turn power on.

If the cutter is worn, replace it. You should replace the cutter after every 200 plots (more or less, depending on the type of media used).

Carriage jams

Check for paper jams or blockage.

Be sure the service station is lowering. If it does not lower, push it left and down, or the cutter will not disengage.

Remove the service station. Allow the carriage to return to the service station area. If

ok, inspect the area below service station for anything that might cause it to elevate.

Carriage axis failure

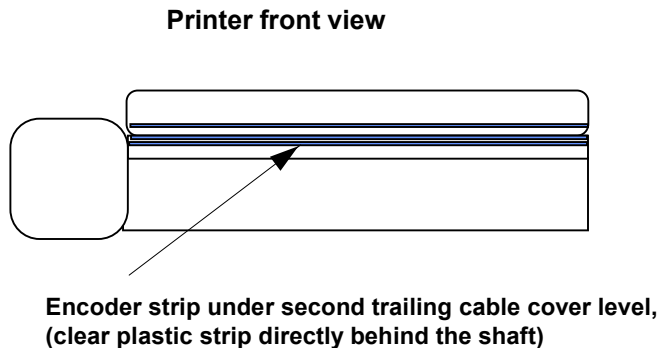
This may be caused by using media which may curl and cause carriage axis failure. Be sure to use inkjet quality media.

An obstruction in the path of the carriage assembly is hindering carriage movement. The obstruction may or may not be visible. Other common causes include dirty encoder strip, media interference, worn carriage bushings, cutter malfunction, and loose trailing cable connections.

After checking the following items, reboot the printer to ensure proper operation.

Note: If the error re-occurs, observe whether the carriage is in the same or different location.

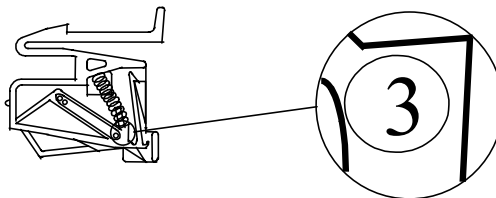
If the carriage is in the same spot, check the encoder strip for visible damage (clear plastic strip under the trailing cable tray and above the belt) Refer to the figure which follows.



Verify that carriage movement is free and smooth by turning the power off and moving the carriage from one end of the shaft to the other (make sure there is no binding and that nothing is blocking the carriage movement). **(MAKE SURE POWER IS OFF BEFORE PERFORMING THIS STEP.)**

Clean the top and bottom of the encoder strip using a cotton swab and distilled water (let it dry completely ~ approximately 30 minutes) before trying to operate the printer).

Remove the cutter from the left side of the carriage and check it for visible damage. Make sure cutter version 3 (or newer) is installed (see the figure below).



Check the shaft for visible damage (carriage moves back and forth on it during operation).

Clean the shaft with a lint free cloth and isopropyl alcohol (let it dry completely before trying to operate the printer).

Check the belt for visible damage such as fraying and pieces coming off it.

Check the trailing cable (cable that moves during printer operation) for visible damage.

Check whether the idler assembly (located at the left end of the belt) moves freely. Check whether it is cracked or broken.

Cannot draw ink during initial siphon

Check that the quick release fitting connection to the ink reservoir is secure.

Check whether contaminants have blocked the ink delivery lines. If necessary, flush the lines with distilled water, then reprime.

Check that the quick release valve on the carriage for that cartridge is in the down position. Raising the valve shuts off the flow of ink.

Initial siphon cannot be established

Check that ink reservoirs are full.

Check ink delivery system for leaks in the lines, at the tubing connection, and at the quick connect coupling to the reservoir. If leaks cannot be stopped, call Technical Support.

Check that the quick release valve on the carriage for that cartridge is in the down position. Raising the valve shuts off the flow of ink.

Ink cartridges do not fire properly

Be sure that cartridges and the service station are cleaned periodically to maintain good print quality. (See the Maintenance Guide.)

Cartridges may wear out after extended use. Try replacing the cartridge.

Store cartridges in a sealed container at room temperature when not in use for extended periods of time.

Make sure the protective tape is removed from the cartridges.

Remove the cartridge and reinstall it, or clean the electrical contact on the cartridge and carrier. Be sure it is clean and dry. Be sure the cartridge is seated properly. (See the Quick Start Guide.)

Check that ink is being fed through the delivery lines. If necessary, use the NovaPrime to pull ink out of the nozzle plate to remove trapped air bubbles.

Be sure the ink reservoirs are not empty.

Cartridges leaking

Check that reservoirs are not overfilled.

Ensure needle assembly is tightly fastened on top of cartridge.

Ensure lines are primed and filled with ink.

Various nozzles are clogged or stop firing

Repeat prime several times.

Remove, clean, and reinstall cartridge; repeat prime. Do not use alcohol on the jet area.

Clean service station; clean cartridge again; repeat prime.

Clean cartridge electrical contacts using a cotton swab moistened with water. Dry contact. Repeat prime. Do not use acetone or any other harsh cleaner as this may cause damage to the flex cable.

Nozzle may have failed. Replace cartridge. Check for nozzle clogs by using the NovaPrime on the cartridge nozzle plate.

Check to see whether spray from printing has contaminated the flex contact. Remove the cartridge and wipe the carriage flex and cartridge flex with a cotton swab moistened with water.

Run the jet status plot as described in the Quick Start Guide. If sections of the print are missing, add the affected jets to the compensation list. Replace the cartridge if necessary.

Ink spills on the flex cable

Flex cable refers to the copper contacts on the carriage where the cartridge seats. Clean the flex cable gently with a cotton swab moistened with water. Do not use acetone or any other harsh cleaner as this may cause damage to the flex cable.

Printer settings are lost when printer is turned off or rebooted

Be sure to save your printer settings to a User number. (See "Saving User Settings" in Chapter 2.) When you are ready to print, select the User number that you saved.

What if I need a firmware upgrade?

You can download firmware upgrades from KODAK PROFESSIONAL's Large Format Inkjet Internet web page www.kodak.com/go/lfinkjet.

Print Quality

Many of the print quality concerns can be resolved by priming, cleaning, and calibrating the cartridges. When this is the case, "Prime, clean, calibrate, or replace" is indicated with other solutions. Refer to the following chapters for details:

Prime - see Quick Start Guide

Clean - see Maintenance Guide

Calibrate - see Quick Start Guide

Replace - see Maintenance Guide

No print appears

Check that tape has been removed from the printhead of the cartridge.

White lines or large gaps on print or portions of characters missing

Prime, clean, calibrate, or replace cartridges.

Check if the ink reservoir is empty. Refill if necessary.

Make sure the media feeds freely.

Overall print quality is poor

Prime, clean, calibrate, or replace cartridges.

Make sure the printer is positioned on level ground.

Use a higher quality print mode, such as Enhanced.

Be sure you are using genuine KODAK PROFESSIONAL inks and media.

Cartridge spits small amounts of ink on paper

Nozzle plate may be flooded. Try using a lower firing rate or replacing the cartridge.

Adjust cartridge preheat as described in Chapter 2.

Streak marks

Clean the service station at least once a week, or more often, depending on the number of prints you are running. (See the Maintenance Guide.)

Prime, clean, calibrate, or replace cartridges.

Line drawings exhibit bleeding

Be sure you are printing on the coated side of the media. Load cut sheet media so that the notch is on the side closest to the carriage. Roll feed media should be loaded so the coated side is on the outside.

If your application software permits, use gamma correction to lighten the color.

Too much air may have been drawn into the cartridge during extended operation.

Colors print as monochrome

Be sure the Color/Mono mode is set correctly. To change a specific drawing from monochrome to color or vice versa, you must switch the Color/Mono setting and re-transmit the file.

Ink smears after removing the print

Be sure the ink is dry before removing the print. If you are printing area fills, you may want to set the Dry Time option. (See "Setting a Dry Time" in Chapter 2.) Turn the dryer on.

Smudged or dark characters

Be sure you are using the correct type of paper for the application.

Make sure the paper is straight and unwrinkled when loading it into the printer.

Prime, clean, calibrate, or replace cartridges.

Try a different print mode.

Improperly formed or misaligned characters

Calibrate cartridges.

Color problems or shadowing

Calibrate cartridges.

Excessive graininess

Perform color deadband compensation. Refer to the Quick Start Guide.

Ghosting

The temperature of the print cartridge affects the size of the dots it prints. When the cartridge is warmer it produces slightly larger dots than when it is cool. Several things affect the temperature of the cartridge including the ambient temperature, the number of dots that have recently been printed and the cartridge heater circuit. This change in temperature and subsequent spot size causes what is referred to as “ghosting” or “parasitic suppression”. Ghosting can occur when printing unidirectional if there is an area in the image in which the cartridge is not firing (i.e. a white box within a filled area). Since the cartridge cooled down while it wasn’t printing, a light area can appear adjacent to the non-printed area. This light area is “ghosting”. By using the cartridge heaters to warm the cartridge in these non-printed areas, the change in temperature and therefore “ghosting” is minimized.

STEPS TO MINIMIZE GHOSTING (PARASITIC SUPPRESSION)

1. Use the preheat function and set the heat to 4 on all the cartridges.
 - On the Main Menu, press Setup Menu/Ink Options Menu/Ink Preheat Menu. In the Ink Preheat menu you will see Cyan - Preheat, Yellow - Preheat, Magenta - Preheat, and Black Preheat.

Go into first preheat function and adjust the value to 4 and press OK.

Continue this with the three remaining preheat functions.

2. Slow the carriage speed down to 5 or lower.

On the Main Menu, press Setup Menu/Print Mode Menu/Carriage Speed. In the Carriage Speed menu, adjust the value to 5 or less and press OK . If you are printing using software to control the printer, you need to make these adjustments in the software.

3. Put the printer in a bi-directional mode.

On the Main Menu, press Setup Menu/Print Mode Menu/Print Direction. In the Print Direction menu, adjust the value to BI and press OK . If you are printing using software to control the printer, make these adjustments in the software.

Colors are not correct or sections of print missing

Prime, clean, calibrate, or replace cartridges.

If you are using a third party RIP, contact the RIP vendor to determine whether they have updated their color tables to work with KODAK PROFESSIONAL inks.

Image is the wrong size

Be sure the dpi setting (300 or 600) matches the resolution of your image file. See Chapter 2 for instructions.

Print contains only partial image

Check the settings of the Margins option. When Margins are set to Normal (the default), the print area is smaller than when Margins are set to Expanded. Try setting the Margins option to Expanded to make the print area larger.

The printer may not have correctly sized your media. Use the Manual Load option to load your media. (See the Quick Start Guide.)

The printer automatically prints in portrait orientation (X axis = paper axis). If you rotated the image in your application to save paper, set the paper size to the next larger size (for example, if you are printing a C size image, choose D size paper). Be sure to set Save Media to ON. This stops the printer from scrolling the full paper height.

Jagged vertical lines

Prime, clean, calibrate, or replace cartridges.

If these suggestions fail, follow the instructions for cleaning the encoder strip and performing deadband calibration.

Splotchy area fill

Try using photo mode. If the problem persists, prime, clean, calibrate, or replace cartridges. Adjust cartridge preheat as described in Chapter 2.

Excessive banding in area fills

Consistent banding is generally a hardware problem; inconsistent banding is generally a software problem.

Use specially coated inkjet media. We provide a full line of high quality inkjet media.

Change the Print Mode option to photo. (See "Print Modes" in Chapter 2.)

Prime, clean, calibrate, or replace cartridges.

Set wiper function to off. Adjust cartridge preheat as described in Chapter 2.

Portions of lines are missing

Prime, clean, calibrate, or replace cartridges.

Clean service station; clean cartridge again; repeat prime.

Clean carriage flex cable and cartridge electrical contacts; repeat prime. Do not use alcohol, acetone, or other cleansers. Use a cotton swab moistened in distilled water. Use tap water if distilled water is not available.

Poor vertical or horizontal line quality

Perform color calibration. (See the Quick Start Guide.)

Data Transfer

Printer doesn't generate a print

Be sure your printer is connected to the port to which you are sending the file.

If you are printing over a network, you will need to determine whether the problem is in the network. Try connecting the printer directly to your computer and send the file again.

Parallel printing doesn't work

Some UNIX workstations have difficulty communicating with the printer using a parallel connection. Try connecting the printer to the network using a network interface box.

To ensure the highest quality and reliability of the data that is sent to the printers, the IEEE standard 1284 parallel cable is required to be used when utilizing the parallel port on the printers.

This standard uses shielded twisted pair technology that reduces noise and increases performance at higher transfer speeds.

Be sure that your parallel cable does not exceed the maximum of 10 ft.

Try using another parallel cable. Be sure that it is securely connected.

Problems printing over a network

Be sure that the printer is configured to run on the network. Pick a driver in your software that is also listed under Emulation on the printer.

No output when printing from Unix

If you encounter “no output” problems when printing from Unix, try the following:

1. Check the printer hardware.

- Check that the printer is plugged in and turned on.
- Check that the cable is connected to the port on the printer and the port on the workstation or server.
 - Check that the cable is the correct cable and is not defective.
 - If the printer is connected to a serial port, make sure the cable supports hardware flow control. A NULL modem adapter needs to support this.
 - Check that hardware switches for the port are correctly set.

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- Use the printer's self-test feature or run the demo print to assure that the printer is functioning.
 - Check that the baud settings for the computer and printer are correct. If the settings do not match, the file may be printed incorrectly or not at all.

2. Verify network connections.

- On a print client or server, type *ping system-name* and press Return. This command checks that the network link between the print server and print client is set up correctly.

If the message says the system is alive, the network is functioning. The message also tells you that either a naming service or the local `/etc/hosts` file has translated the host (system) name entered into an IP address. If it hasn't, you must enter the IP address.

- If you get a "not available" message, check the following:
 - How is NIS or NIS+ set up at the site?
 - Do you need to take additional steps to allow the print servers and print clients to communicate with each other?
 - If your site is not running NIS or NIS+, have you entered the IP address for the print server in each client's `/etc/hosts` file and entered all print client IP addresses in the `/etc/hosts` file of the print server?
 - Check that the port monitor is configured correctly on the print server.
 - Check that the network listen services are registered with the port monitor on the print server.

3. Check the LP print service.

- On both the print server and print client, make sure the LP print service is running.
 - On both the print server and client, make sure the printer is accepting requests.
 - On both the print server and print client, make sure the printer is enabled to print requests.
 - On the print server, make sure the printer is connected to the correct serial port.
 - On both the print server and print client, make sure the printer is configured properly.
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- On the print server, make sure the printer is not waiting because of a fault.
 - Make sure the printer is not set up as a login terminal.

Application Software

Isolating a problem to your software

Sometimes printing problems are application software-specific.

Try printing the “Test File” as described on page 3-6 of this guide. If the test file prints, the printer’s health is probably good.

Try printing a simple file from your application or from another application. If this prints correctly, the problem may be with your software.

If you are using a Windows application and the file does not print from Windows, try printing a file from DOS. If this prints correctly, your problem may be with your Windows driver or Windows setup.

Difficulty generating prints ranging from A to E size

Many software applications limit the maximum print size to “C” or “D” size due to the way that they map their internal coordinate system to memory.

Some applications which limit maximum print size are listed below:

- Microsoft Word: 22 x 22”
- Lotus 123: 17 x 22”
- CorelDRAW: 30 x 30” (TIFF files are limited to 11 x 17”)
- Microsoft Project: 36 x 61”
- Micrographx Designer: 68” maximum
- Ashlar Vellum: 101” maximum

Calling for Help

If you have tried the suggestions in this manual and still need assistance, call the reseller where you purchased your printer.

Before you call technical support for help, be sure that you have all of the following information available:

Printer Information

- model
- firmware
- revision (letter)
- memory
- serial number
- K-number

Computer Information

- model
- operating system
- connection (serial or parallel)

Customer Technical Support

To resolve printer problems, use the suggestions provided in this guide. If you continue to have problems, you can get help from any of the following:

Kodak Support Numbers and Websites

For help in the U.S. and Canada, call 1-800-23KODAK, between 9:00 a.m. and 8:00 p.m. Eastern Standard Time on regular business days.

For assistance you will need to know the K-number that is on the printer. The number is on a silver label which is located below the serial number, in the paper path nearest to the power switch, on the back of the printer.

For web support, visit the Service and Support section of KODAK PROFESSIONAL's Large Format Inkjet site:

<http://www.kodak.com/go/lfisupport>